

## EMERGENCY ROLLOVER PROCEDURES

### WARNING

**Army tactical wheeled vehicles are not designed with rollover protection as a primary requirement. At the first sign of a vehicle rollover, occupants should immediately brace for impact. As a precaution, ensure all loose items and equipment, which can cause severe injury or death, are firmly secured prior to movement.**

### 1. PREVENTIVE MEASURES

a. **Driver Training.** Start by training your drivers in the six important factors that can affect vehicle stability. These six factors are:

(1) *Vehicle Center of Gravity.* The height of a vehicle's center of gravity and the length of the wheelbase determine the vehicle's stability.

(2) *Load Security.* Improperly secured loads can change a vehicle's center of gravity and its stability. Bulk tank trucks are inherently less secure because fluids can surge when trucks brake or go around curves, thereby altering the center of gravity. Also, a vehicle loaded with containers will have a higher center of gravity. Additionally, it is important that payloads are secured as closely as possible to the lateral centerline of the truck or trailer bed. If the payload is not centered properly, the vehicle stability will not be equivalent when turning to both the right and left. See Figures: 1-1, and 1-2.

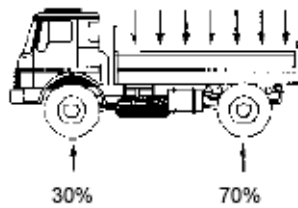
(3) *Radius of Curves and Slope of Roadways.* These are important because they generate a centrifugal force that acts sideways on the vehicle, thereby decreasing vehicle stability.

(4) *Vehicle Speed.* This is probably the most important factor contributing to vehicle instability because it magnifies problems presented by the other three factors. As the vehicle's speed increases, the centrifugal force, or sideways force increases. Faster speeds also result in decreased driver response times. Speed is the factor over which the driver can exercise the most control. When maneuvering through curves or sudden traffic situations, a vehicle with a high center of gravity can easily turn over. Speed is even more important when the movement of the liquid is "in phase" with the vehicle's maneuver. If the liquid is on one side during the first curve, then shifts to the other side during the next curve, the liquid is positioned to shift back to the first side with four times the side force it had during the initial curve. Sudden vehicle maneuvers are especially risky because the combination of speed and load shift makes the vehicle unstable.

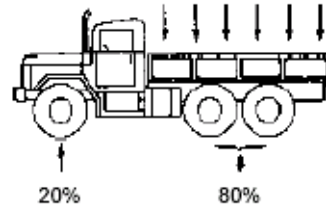
(5) *Trailer Towing.* Vehicles towing trailers are much more prone to roll over, especially in curves and during sudden steering maneuvers, as a result of the exaggerated motion of the trailer.

(6) *Vehicle Condition and Preparation.* It is critical the vehicle is in good operating condition before starting your mission, with particular attention paid to the tires' condition and air pressure. Properly performed PMCS is the best way to control this potential hazard.

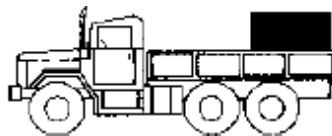
CAB-OVER-ENGINE (COE) TRUCK



CONVENTIONAL TRUCK

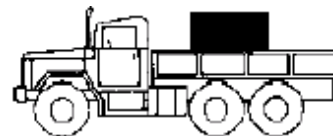


Tires, axles, and frame are designed to carry a load distributed as shown.



WRONG

This load bends the frame, overloads rear tires, and makes steering almost impossible.



RIGHT

Set a concentrated load just ahead of the rear axle with the longest side on the floor, if possible.



WRONG



RIGHT

Select the right vehicle for the right job.



WRONG

This placement overloads one spring and set of tires. Brakes lock on the light side, causing skids.



RIGHT

Nothing is overloaded; frame will not twist and loosen cross-member rivets.

Figure: 1-1

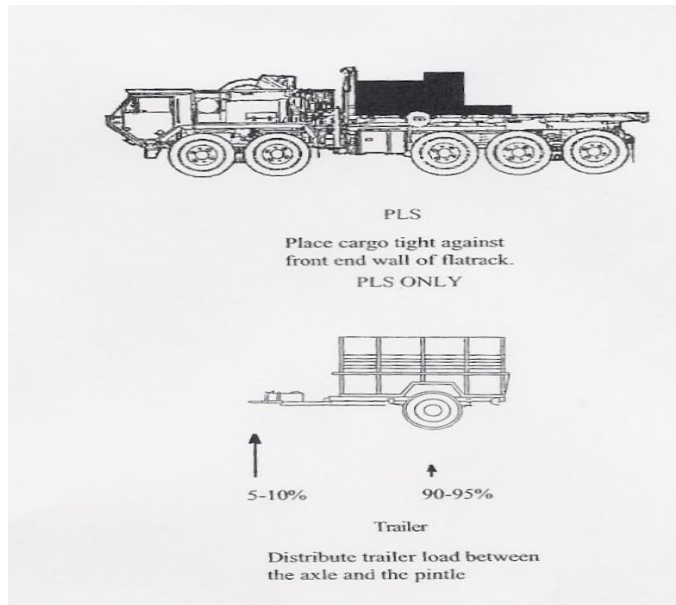


Figure: 1-2

**b. Risk Management Control Measures.** Every driver can take eight basic steps to prevent or reduce the potential for rollovers.

NOTE: Commanders should include safety tips in initial and sustainment tactical wheeled vehicle operator training.

(1) Adjust the vehicle speed to allow a "Speed Cushion" for maneuvering (at least 10 MPH below the posted speed limit is recommended when approaching a curve).

(2) Slow down and downshift early. Do not shift in the curve.

(3) Observe speed limit and check speedometer to ensure that your vehicle is below the posted speed.

(4) Do not rely on a "seat of the pants" sense to judge speed and vehicle maneuverability. New suspensions and chassis set-ups give a false sense of control.

(5) Slowly accelerate out of the curve.

(6) Maintain a "Space Cushion" (distance between your vehicle and other traffic) so that you have a safe maneuvering speed to compensate for errors in judgment, weather, road conditions, and poor driving by other motorists.

(7) Avoid the temptation to brake hard if the rear of the vehicle or trailer “slides out”. Instead, if there is clearance, attempt to apply steady throttle, allowing the vehicle to straighten itself. Braking will accelerate the skid, contributing to loss of control and rollover.

(8) Risk Management Procedures. Personnel are required to wear seatbelts. All US Army personnel should follow unit standard operating procedures/tactical standard operating procedures and be in proper uniform when operating or riding as a passenger in military vehicles. It is recommended when operating tactical military vehicles in off-road conditions during field training, driver’s training, and tactical operations that the Kevlar helmet be worn at all times with chin strap properly secured.



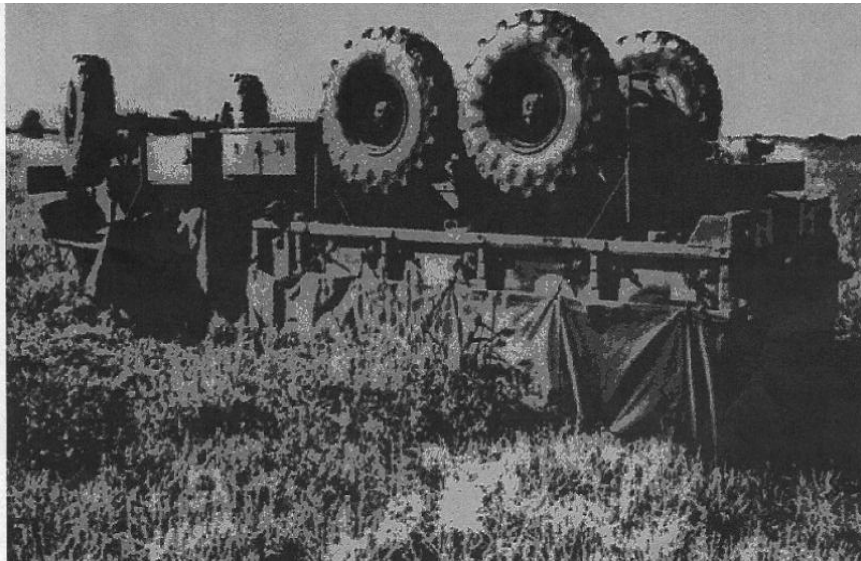
While taking a curve at almost 70 mph, the driver of an M998 lost control. The vehicle flipped and ejected its three unbelted occupants. One was killed and the others seriously injured.

## **2. ROLLOVER PROCEDURES**

NOTE: The driver and passengers **MUST** wear seat belts (if equipped). The senior occupant is responsible for ensuring all personnel, riding in or on a vehicle, are wearing seatbelts (if equipped) and that all required equipment inside the vehicle is properly stored and secured. The senior occupant must ensure that all personnel are checked for injuries and injured personnel are given emergency first aid as needed. All sensitive items are to be secured, and the accident reported immediately. The first soldier to notice vehicle beginning to rollover should shout “**ROLLOVER!**”

- a. When rollover is imminent the driver performs the following:

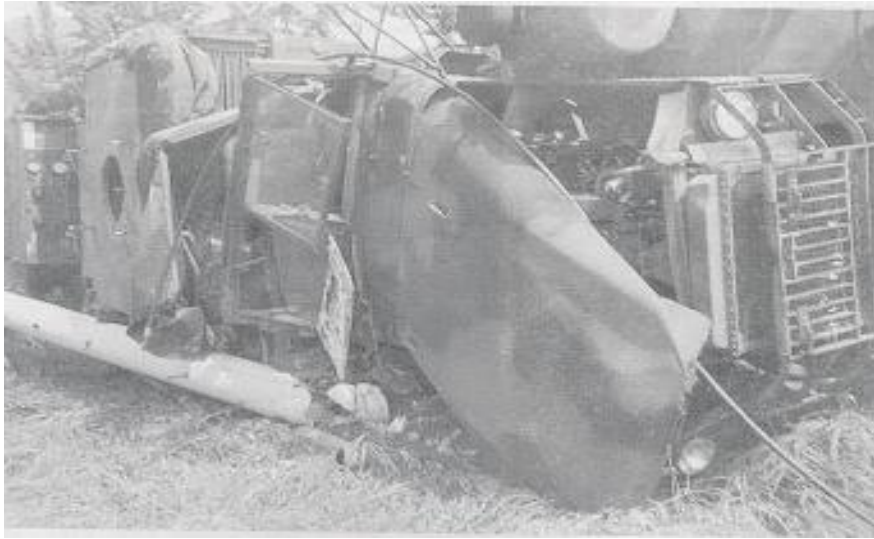
- (1) Release the accelerator.
  - (2) Keep hands on the steering wheel with extended but not locked arms, tucks head and chin into chest and braces for an impact.
  - (3) Yell “ROLLOVER!”
- b. When the rollover is imminent the passenger(s) performs the following:
- (1) Tuck head and chin into chest and braces for impact.
  - (2) Plant feet firmly on the floor while holding onto a stationary object.
  - (3) Yell “ROLLOVER!”



Three minutes after leaving post in an M923A2, one soldier was dead and two others were seriously injured.

- c. When the vehicle is stabilized the driver performs the following:
- (1) Shut down the engine.
  - (2) Check for injuries.
  - (3) Identify an evacuation route.
  - (4) Retrieve fire extinguisher.
  - (5) Exit the vehicle.

- (6) Check for fire and fuel leaks or spills.
- (7) Attempt to contain fire and /or fuel leaks/spills.
- (8) Account for occupants and sensitive items.
- (9) Seek medical attention, as needed.
- (10) Radio for help.



The 5-ton driver was following too close behind another vehicle when he lost control and hit a utility pole. The passenger was killed.

d. When the vehicle is stabilized the passenger(s) perform the following:

- (1) Check for injuries.
- (2) Exit the vehicle.
- (3) Account for personnel and sensitive items.
- (4) Seek medical attention, as required.
- (5) Assist the driver.

### **WARNING**

**Never attempt to leap from a rolling vehicle. It may roll over you. Ensure that the vehicle has stopped its roll before moving. Upon complete evacuation of all personnel, vehicle should be inspected for fire hazards such as leaking oil, fuel, and hydraulic fluid. Use the portable fire extinguisher when inspecting vehicle for leaks in case of fire, which could cause injury or death. If hazardous/explosive materials are involved, driver should take actions according to the DD Form 836 accompanying load. Notify emergency response personnel and remain at evacuation distance while securing accident site.**

3. **LEADER ACTIONS:** There are many good programs leaders can establish to reduce accident risk. Designated-driver programs and unit on-the-spot safety inspections are good starting points.

a. Commanders should:

- Know their soldiers.
- Require disciplined, legal behavior.
- Conduct individual soldier risk assessments (see format on page 3-10).
- Provide incentives for safe performance.
- Provide accident avoidance and remedial driver training programs.
- Hold subordinate leaders accountable for leader intervention.

b. Squad leaders and Platoon Sergeants are the first line of defense. They should:

- Know their soldiers' driving habits.
- Ensure that deficiencies identified in vehicle inspections are corrected and then *re-inspect*.
- Recommend when driving privileges should be revoked.
- Counsel individuals on the repercussions of unsafe driving.
- Conduct periodic tailgate safety briefings to small groups.
- Encourage soldiers to look out for each other.